THE AMERICAN MINERALOGIST

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ARTHUR CHAMBERLAIN AND HIS MAGAZINES

ALBERT C. BATES

MORE than seven years have passed since we have had a monthly magazine wholly devoted to the needs of the collector of minerals, and now that such a periodical is to appear it seems fitting that in its first issue it should review the previous publications and tell something of the story of the man who made them possible.

Arthur Chamberlain, the subject of this paper, has been a collector of minerals from his boyhood days. He is a printer by trade; as were also several brothers who owned a printing establishment. These facts, combined with ambition, love, and eagerness for this work, easily explain the bringing out in 1885 of the first magazine to further his hobby. The publications he fathered changed names several times, and grew in size and character with each change, until he wrote his valedictory in February, 1909. At that time he said, in part:

"This will be the last number of the magazine. As most of my readers know, it has not been a paying proposition, but still on account of pleasant acquaintances secured, and in some instances staunch friends made thru its publication, I have been loath to discontinue it. However, years grow apace and I feel that I owe it to my health to ease up a little on my strenuousness. Almost a quarter of a century ago I started my first monthly, and I have been in harness ever since. As all the work has been done on evenings and holidays, so as not to interfere with my other work, and as I always set all the type myself, I have hardly known a leisure hour in all these years."

Mr. Chamberlain's modesty must be respected, else a long and close personal association would cause something like a eulogy to appear here. It is, however, easy to appreciate the character of the man from the quotation above.

The first number of *The Exchangers' Monthly* appeared in November, 1885, the subscription price being twenty-five cents per year. The name of the magazine was changed in November, 1890, to *The Mineralogists' Monthly*, and the price advanced to fifty cents per year. It contained twelve pages of reading matter, and eight pages of advertisements. The last number of this monthly appeared under date of March, 1893. It may safely be said that the heyday of mineral collectors was about this period; by this is meant that the number of active collectors was large; and the great supplies of good specimens from all parts of the world, but especially from our western states, offered by several dealers, at moderate prices, kept the enthusiasm of the collectors at high intensity. Death has decimated the ranks, and several of the notable private collections have been sold outright, or otherwise distributed.

Minerals was first published in January, 1892, by Mr. Goldthwaite. It was a much larger publication than the *Mineralogists' Monthly*, and as there seemed room for but one magazine of this character it was arranged to merge the two, with Mr. Goldthwaite as publisher, and Mr. Chamberlain as editor. There was too limited a field for so ambitious a magazine, however, so *Minerals* ended with a double number—November-December, 1893. There was no magazine for the next two months, but preparations for making one were under way with Mr. Chamberlain and the writer as editors and publishers. *The Mineral Collector* appeared in March, 1894; and by the most strenuous labor Mr. Chamberlain alone, after the first year, brought it out monthly, until March, 1909.

Knowing intimately the history of *The Mineral Collector*, thru its fifteen years of life, the writer's desire is strong to philosophize upon some features of that history. Suffice it to say that the magazine was produced to be helpful to those who liked the same things in the same way as the generous publisher himself; and thereby collectors and distributors of minerals and crystals owe much to Arthur Chamberlain.

LAMELLAR CALCITE

ALTHO the mineral calcite commonly occurs in rhombohedral crystals, it may also appear in thin-tabular or lamellar masses, to which the terms aphrite, argentine, paper spar, silvery chalk, slate spar, etc., have been applied by various authors. Crystal habit is in general controlled by external conditions, such as temperature, pressure, and in particular the presence of foreign substances in the solutions from which the crystals grow. What causes calcite to assume a lamellar habit is at present unknown, but observations as to the conditions under which this form of mineral occurs in nature should throw considerable light upon the question, and it has accordingly been decided to hold in these pages a sort of symposium upon this subject. This is here opened with a paper by Mr. Hawkins on certain of the occurrences in Rhode Island. In a future number of the magazine a Pennsylvania occurrence will be described by Mr. Gordon. Contributions on this subject are invited from our readers. If you have a specimen of lamellar calcite in your collection, tell us with what minerals it is associated, whether it appears to be a primary or a secondary mineral, or anything else that may throw any light on its origin.

THE EDITORS.

THE OCCURRENCE OF LAMELLAR CALCITE IN RHODE ISLAND

ALFRED C. HAWKINS, *Brown University*

A careful survey of Rhode Island geology shows the presence of quartz veins in a wide variety of locations thruout the state, cutting practically all other rocks known to be exposed. Many of these veins carry some feldspar, or are closely associated with pegmatite dikes, showing that they were probably formed in connection with the intrusion of one or the other of the numerous granite masses of this region. Some carry hornblende, others epidote (where the veins cut thru basic rocks), still others galena, sphalerite, pyrite, pyrrhotite, chalcopyrite, and fluorite. But more common than any of these is calcite, occurring in quartz as an integral part of the vein, and often in large amount. Many of the largest quartz veins exposed, such as those near Woon-

socket and at Durfee Hill, Glocester, carry several per cent of their volume of calcite. That the calcite existed originally in the vein in this form is not certain, but the introduction of calcium in connection with the introduction of the granite seems very probable, for calcium silicates, such as scapolite, and the phosphate, apatite, occur in pneumatolytic zones near granite in western Rhode Island. This scapolite at least is probably indicative of high temperature at the time of the formation of the veins.

Lamellar calcite has been found in at least two localities in Rhode Island. At Cumberland many specimens have been found, but their relations to the surroundings are not at present determinable. The calcite probably occurred along or near a contact of granite with the green schist. A second locality, however, is now accessible. At Hamilton, in a small outcrop along the trolley line, a narrow dike of granite cuts thru Carboniferous shales. On the border of the granite the writer has found tiny bright quartz crystals and rosettes of chlorite, embedded in a mass of pearly white plates of calcite.

This calcite may well have been deposited from material in solution in the liquids emanating from the cooling granite. The quartz, which preceded it in time of formation, is complicated in crystalline structure, showing a tendency to exhibit small faces of the forms *s* and *x*. Of two quartz crystals collected close together, one is right-handed in development, the other left-handed. Such complexity of development of quartz is typical of pneumatolytic veins. A vein in green schist, evidently connected with granite in the immediate vicinity, at Centerdale, near Providence, has been found to contain quartz crystals, all of which showed rare forms. One crystal has a profusion of faces, and is twinned, being both right and left-handed in development.

From these observations the writer would conclude that the lamellar calcite was probably formed by the action of hot waters emanating from a granite magma, and accordingly that it is a high temperature mineral.

COLUMNAR MANGANOCALCITE FROM FRANKLIN FURNACE, N. J.

Wallace Goold Levison

Mr. Charles W. Hoadley recently obtained at Franklin Furnace, N. J., and presented to the writer, a specimen of an anhydrous mineral somewhat resembling a fibrous calcite of a slightly pinkish white color. It is soluble in cold, but more freely in warm HCl, with effervescence. It is, however, not brittle like calcite, but so tough that splinters of its entire length, over six inches, can be detached from it as from some asbestos.

It gives the ordinary blowpipe reactions of manganocalcite but its columnar structure is so striking that the writer made an approximate analysis of it with the following result:

Sp. Gr. = 2.81. Comp.: CaO 38.58, MnO 11.94, FeO 0.22, ZnO 0.29, MgO 4.33, CO_2 39.70, SiO_2 & insol. 4.60, sum 99.66.

Carbon dioxide was determined by loss on ignition, with allowance for oxygen absorbed by conversion of MnO to Mn_3O_4.

According to Mr. Hoadley this variety of manganocalcite comes from the main shaft of the mine but occurs very sparingly. The specimen examined he took from the "picking table." It is not represented in Mr. Hodgkinson's or any other mineral collection he has seen in Franklin. He judges that it occurs only occasionally as a lining of fissures and not with willemite or other minerals attached to it.

REFERENCE LISTS OF CHEMICAL ELEMENTS

EDGAR T. WHERRY

THE accompanying lists have been compiled from the most recent publications available. In Table I the data are taken chiefly from the 1916 Report of the International Committee on Atomic Weights, with a few additions; the atomic weights are carried to the first decimal place, which is all that is necessary for the calculation of mineral compositions.

TABLE I. THE CHEMICAL ELEMENTS, WITH THEIR SYMBOLS AND ATOMIC WEIGHTS

Elements	*Symbols*	*Atomic weights*	*Elements*	*Symbols*	*Atomic weights*
Actinium	Ac	———	Molybdenum	Mo	96.0
Aluminium	Al	27.1	Neodymium	Nd	144.3
Antimony (Stibium)	Sb	120.2	Neon	Ne	20.2
Argon	A	39.9	Nickel	Ni	58.7
Arsenic	As	75.0−	Niton (Ra-emanation)	Nt	222.0
Barium	Ba	137.4−	Nitrogen	N	14.0
Bismuth	Bi	208.0	Osmium	Os	190.9
Boron	B	11.0	Oxygen (THE STANDARD)	O	16.0
Bromine	Br	79.9	Palladium	Pd	106.7
Cadmium	Cd	112.4	Phosphorus	P	31.0+
Calcium	Ca	40.1−	Platinum	Pt	195.2
Carbon	C	12.0	Polonium	Po	———
Cerium	Ce	140.3−	Potassium (Kalium)	K	39.1
Cesium (Caesium)	Cs	132.8	Praseodymium	Pr	140.9
Chlorine	Cl	35.5−	Radium	Ra	226.0
Chromium	Cr	52.0	Rhodium	Rh	102.9
Cobalt	Co	59.0−	Rubidium	Rb	85.5−
Columbium (Niobium)	Cb	93.5	Ruthenium	Ru	101.7
Copper (Cuprum)	Cu	63.6−	Samarium	Sa	150.4
Dysprosium	Dy	162.5	Scandium	Sc	44.1
Erbium	Er	167.7	Selenium	Se	79.2
Europium	Eu	152.0	Silicon	Si	28.3
Fluorine	F	19.0	Silver (Argentum)	Ag	107.9−
Gadolinium	Gd	157.3	Sodium (Natrium)	Na	23.0
Gallium	Ga	69.9	Strontium	Sr	87.6+
Germanium	Ge	72.5	Sulfur (Sulphur)	S	32.1−
Glucinum (Beryllium)	Gl	9.1	Tantalum	Ta	181.5
Gold (Aurum)	Au	197.2	Tellurium	Te	127.5
Helium	He	4.0	Terbium	Tb	159.2
Holmium	Ho	163.5	Thallium	Tl	204.0
Hydrogen	H	1.0+	Thorium	Th	232.4
Indium	In	114.8	Thulium	Tm	168.5
Iodine	I	126.9	Tin (Stannum)	Sn	118.7
Iridium	Ir	193.1	Titanium	Ti	48.1
Iron (Ferrum)	Fe	55.8+	Tungsten (Wolframium)	W	184.0
Krypton	Kr	82.9	Uranium	U	238.2
Lanthanum	La	139.0	Vanadium	V	51.0
Lead (Plumbum)	Pb	207.2*	Xenon	Xe	130.2
Lithium	Li	6.9+	Ytterbium (Neo-)	Yb	173.5
Lutecium	Lu	175.0	Yttrium	Yt	88.7
Magnesium	Mg	24.3	Zinc	Zn	65.4−
Manganese	Mn	54.9+	Zirconium	Zr	90.6
Mercury (Hydrargyrum)	Hg	200.6			

* Radio-lead, which has the same chemical properties as lead, has a variable atomic weight, within the limits 206.3 and 208.5.

The nomenclature, symbols, and atomic weights given in the above list will be used in this magazine. Discoveries of new elements, and redeterminations of atomic weights which lead to essential changes, will be announced, as published, in our "Reviews and Abstracts" department.

In Table II, which represents the latest arrangement of the Periodic System, the 40 elements which have been reported as occurring native are underlined.

TABLE II. THE POSITIONS OF THE NATIVE ELEMENTS IN THE PERIODIC SYSTEM

H	He	Li		Be		B		C		N		O		F		
	Ne	Na		Mg		Al		Si		P		S		Cl		
	A	K		Ca		Sc		Ti			V		Cr		Mn	Fe Co Ni
			Cu		Zn		Ga		Ge	As		Se		Br		
	Kr	Rb		Sr		Y		Zr			Cb		Mo			Ru Rh Pd
			Ag		Cd		In		Sn	Sb		Te		I		
	Xe	Cs		Ba		LaSaHo CeEuEr PrGdTm NdTbYb ..DyLu		..			Ta		W	A	..	Os Ir Pt
			Au		Hg		Tl		Pb	Bi		..		..		
	Nt			Ra		Ac		Th			Po		U		..	..

While some of these native elements are found free in essentially pure form, many are known only as isomorphous mixtures with other closely related ones; these are indicated by the term "isomorph" in the table below. A few occur only in dispersoid form, that is, distributed in sub-microscopic particles through crystalline minerals, and giving rise to non-essential colors; these are also noted in Table III. In this table the relative stabilities under ordinary conditions of the different forms in which many of the elements occur are indicated by their order, the most stable ones being stated first in each case.

TABLE III. THE FORMS OF THE NATIVE ELEMENTS

Elements	*States or Types of Crystallization*	*Elements*	*States or Types of Crystallization*
Hydrogen	Gas	Vanadium	Isometric (Meteoric, isomorph)
Helium	Gas	Columbium	Isometric (Isomorph)
Neon	Gas	Tantalum	Isometric (Isomorph)
Argon	Gas	Oxygen	Gas
Krypton	Gas	—Ozone	Gas
Xenon	Gas	Sulfur	Orthorhombic
Niton	Gas		Monoclinic
Sodium	Dispersoid		Amorphous
Potassium	Dispersoid		Gas
Copper	Isometric	Selenium	Monoclinic
Silver	Isometric		Trigonal (Isomorph)
	Amorphous		Orthorhombic (Isomorph)
	Liquid (Amalgam)		Amorphous
	Gas		Gas
Gold	Isometric	Tellurium	Trigonal
	Amorphous		Orthorhombic (Isomorph)
	Liquid (Amalgam)		Gas
Calcium	Dispersoid	Chromium	Isometric (Meteoric, isomorph)
Zinc	Trigonal	Fluorine	Gas
Mercury	Isometric (Isomorph)	Chlorine	Gas
	Liquid	Bromine	Gas (or liquid)
	Gas	Iodine	Amorphous
Carbon	Trigonal (Graphite)	Manganese	Isometric (Isomorph)
	Isometric (Diamond)	Iron	Isometric
	Amorphous	Cobalt	Isometric (Isomorph)
Silicon	Dispersoid	Nickel	Isometric (Isomorph)
Tin	Tetragonal	Ruthenium	Trigonal (Isomorph)
Lead	Isometric	Rhodium	Trigonal (Isomorph)
Nitrogen	Gas		Isometric (Isomorph)
Phosphorus	Isometric (Meteoric)	Palladium	Isometric (Isomorph)
	Amorphous		Trigonal
Arsenic	Trigonal	Osmium	Trigonal (Isomorph)
	Monoclinic		Isometric (Isomorph)
	Isometric	Iridium	Trigonal (Isomorph)
	Amorphous		Isometric (Isomorph)
Antimony	Trigonal	Platinum	Isometric (Isomorph)
Bismuth	Trigonal		Trigonal (Isomorph)

Several of the above forms have not been noted in Dana's System of Mineralogy nor any of the Appendices to that work; references to their occurrence will be given in a subsequent article.

EDITORIAL

SINCE the disappearance of *The Mineral Collector* as an independent journal over seven years ago, there has been no publication available to the various mineralogical societies of America in common for the interchange of notices of their proceedings or papers, or to collectors in general as a medium for learning of or describing new localities and finds or promoting exchanges.

After prolonged discussion and a thoro consideration of the desirability of, and responsibilities connected with, the preparation of such a journal, we herewith venture to initiate a new monthly publication for which the name AMERICAN MINERALOGIST has been selected and which is designed to supply this need.

In further detail its object is to bring mineralogists, both amateur and professional, into active sympathy and coöperation, and to further this aim we hope to enlist the good will, appreciation, and assistance of all collectors of minerals, students of mineralogy and, as well, those actively engaged in mineralogical investigation and research. Our appeal to the latter rests not only upon the circumstance that important material for investigation is often provided by observant collectors, but also on our conviction that the ranks of investigators will be enlarged from time to time by recruits whose interest in descriptive mineralogy may be first awakened by the less technical papers in our journal.

Letters; articles on minerals, localities, excursions and similar subjects, especially announcements of new varieties or species; and critical suggestions from our readers, are earnestly solicited and will be gratefully received. When of general interest such communications will, as far as possible, be published or otherwise receive due consideration, and the character of the journal will be largely determined thereby.

Every effort will be made to obtain and feature a majority of articles of non-technical character so that mineral collectors, students, and those interested in mineral production or products who may be unacquainted with the more advanced phases of Geochemistry, Geophysics, and Geology will find the magazine of utility.

The journal cannot assume responsibility for the statements or views of contributors or advertizers. Conservative simplified spelling and readily comprehensible abbreviations will be used thruout.

THE EDITORS.

THE NEW YORK MINERALOGICAL CLUB

THIS society was instituted with thirty-five applications for membership at a meeting held Sept. 21, 1886, on call of Geo. F. Kunz, B. B. Chamberlin and D. S. Martin at the residence of the latter in New York City. Professor Martin officiated as Chairman and Geo. F. Kunz as Secretary. Subsequent meetings were held monthly until the society was first regularly organized by the adoption of its present name, a constitution and by-laws and an election of officers at the eighth meeting held at the residence of the late honorary member, Mr. Bernard G. Amend (of the widely known firm of Eimer & Amend) in New York in April, 1887. The officers thus first elected were George F. Kunz, Secretary; B. B. Chamberlin, Treasurer; D. S. Martin, Rev. J. Selden Spencer, E. A. Hutchins, and George F. Kunz, Executive Committee; R. P. Whitfield and L. P. Gratacap, Curators. Mr. Gratacap still retains this office. For several years no President was appointed or elected, as the meetings were held exclusively at private houses and the host of the evening officiated as President for the occasion. The constitution and by-laws first adopted have been since but little amended.

The object of the club as therein stated was to develop and maintain an interest in the study of mineralogy, and especially of the minerals occurring in the rocks of the city of New York, thru collecting and maintaining a collection of specimens, the study of existing collections, promoting the contribution of original papers on mineralogy, and otherwise as might be expedient from time to time.

The society is now organized with a President and the usual complement of officers, and meets regularly once a month from October to June or on call of the officers, at the American Museum of Natural History in New York, the residences of members on invitation, or at other places as may be expedient for advancing its objects. It is not incorporated, has no library, but owns a collection the nucleus of which was made by and purchased from Mr. B. B. Chamberlin, which has been largely increased by contributions, and also by two additional collections loaned by members, the whole being now on public exhibition by

special arrangement in the Museum of Natural History. All the specimens in this collection were found chiefly in excavations for cellars of houses, street cuts, or subways in the several boroughs of the City of New York and adjacent localities, but more especially in the Borough of Manhattan on Manhattan Island.

Excursions to favorable localities for collecting or to visit noted collections both private and in institutions are held from time to time but chiefly in the summer months as occasion offers.

At present the club is affiliated with the New York Academy of Sciences and it is publishing from time to time selected papers presented at its meetings in the form of bulletins which may eventually be combined in volumes of its Transactions.

The *Thirtieth* Annual Meeting of the club was held on May 10, 1916, on which occasion a paper describing the installation of the mineral collections in the New York State Museum in the new State Educational building at Albany was presented by Mr. H. P. Whitlock, C.E., the curator. Following the paper, the annual election was held and the chief officers elected were:

President: James G. Manchester;
Vice President: Geo. E. Ashby;
Treasurer: Gilman S. Stanton;
Secretary: Wallace Goold Levison;
Chief Curator: L. P. Gratacap.

Persons desiring further information about the club are invited to correspond with any of these officers.

An Excursion to West Paterson

In accordance with its usual custom, the New York Mineralogical Club arranged an excursion on Memorial Day, which was attended by about thirty persons, including members and friends. West Paterson was the objective point selected, and the two noted quarries were visited, the newer one after lunch. At this quarry a special blast had been fired by previous arrangement at noon for the benefit of the party, and during the afternoon the active members obtained many interesting specimens of the zeolites and associated minerals which differ in minor particulars of habit from those of the older quarries.

Wallace Goold Levison, *Secretary.*

THE PHILADELPHIA MINERALOGICAL SOCIETY

The Wagner Free Institute of Science, May 11, 1916.

A stated meeting of The Philadelphia Mineralogical Society was held on the above date with President Trudell in the chair.

The following were present: Allen, Bradford, Egee, Flack, Geist, Gordon, Hagey, Jones, Knabe, Leffmann, Rothermel, Trudell, Vanartsdalen, and one visitor.

The minutes were read and approved. Mr. R. J. Hagey, 115 W. Duval Street, Philadelphia, was elected to active membership.

Mr. William C. Knabe presented a paper on "The Mineral Deposits of Joplin, Missouri." The secretary read a paper by Dr. Edgar T. Wherry on "The Lozenge-Shaped Cavities in the First Watchung Mountain Zeolite Deposits."

Mr. Gordon reported a trip to Lafayette on the Schuylkill River with Messrs. Twitchell, Trudell, Knabe, Jones, Biernbaum, Frankenfield, and others. Very fine cleavages of oligoclase were found. Mr. Gordon also reported a trip to Ward's quarry, Delaware County, finding very good argentine (a variety of calcite), laumontite and stilbite. The rocks and the occurrences of the minerals were briefly described.

Dr. Egee exhibited a specimen of greenockite from Joplin, Missouri.

The Wagner Free Institute of Science, June 8, 1916.

A stated meeting of The Philadelphia Mineralogical Society was held on the above date with President Trudell in the chair.

Those present were Biernbaum, Flack, Frankenfield, Geist, Gordon, Hagey, Knabe, Jones, Leffman, Rosenbaum, Rothermel, Trudell, Vanartsdalen, and two visitors.

Mr. John G. Rothermel gave a short illustrated talk on "The Geology of the Grand Canyon District." Mr. Gordon exhibited a number of photographs of minerals, and read some abstracts on amethyst and beryl in Pennsylvania.

Mr. Trudell gave a short account of a trip to Cornwall, Pa., with Mr. Gordon. The following trips were also reported: Mr. Biernbaum, to Ward's quarry in Delaware Co., with Messrs. Frankenfield, Trudell, Gordon, and Nichols; Mr. Rosenbaum, a number of trips in the vicinity of Bethlehem, Pa. Mr. Vanartsdalen reported that nothing was now obtainable at Goat Hill, or Moore Station, in New Jersey.

The following specimens were exhibited—By Mr. Biernbaum: oligoclase, from Lafayette on the Schuylkill, and green albite from Ward's quarry; Mr. Trudell: pyrite, chalcopyrite, magnetite, aragonite, and byssolite from Cornwall.

SAMUEL G. GORDON, *Secretary.*

REVIEWS AND ABSTRACTS

EDGAR T. WHERRY

IN this department it is proposed to include references to all new books and journal articles on subjects of interest to mineral collectors. New species and varieties of minerals will be listed and fully described and their classification discussed. The editor will be glad to receive at all times suggestions, criticisms, and information concerning omissions or errors in this department. Everything published since January 1, 1916, will be included.

The form of reference will be as follows: Title, author, journal (abbreviated according to the list in *Chemical Abstracts*, **9**, 24, iii-xix 1915.), volume (in bold face type), number, pages, and date. In certain cases abstracts will be taken bodily from *Chemical Abstracts*, Mr. E. J. Crane, editor of that journal, having kindly given us permission to do so; these will be so marked.

SOME NEW MINERAL OCCURRENCES FROM THE TINTIC DISTRICT, UTAH. A. H. MEANS, *Am. J. Sci.* **41**, 1, 125–130, 1916.

Comprises descriptions of geocronite(?), adamite, daubreeite(?), bismite(?), jarosite, and a new species, *arsenobismite.* The properties of the last are: color, yellowish-green with a tinge of brown, luster resinous, structure cryptocrystalline, hardness 3, specific gravity 5.70, refractive index 1.60; in composition, a rather impure basic bismuth arsenate, with the formula $2Bi_2O_3.As_2O_5.2\frac{1}{2}H_2O$. [Probably $(BiOH)''(BiO_2H_2)'(AsO_4)'''$. Ed.]

[In the crystallo-chemical classification arsenobismite evidently belongs in a group (not named by Dana) which includes the minerals augelite $(AlOH)(AlO_2H_2)(PO_4)$ and dufrenite $(FeOH)(FeO_2H_2)(PO_4)$. From the genetic viewpoint it is probably to be classed with minerals of metamorphosed hydrothermal deposits, evidently resulting from the interaction of an excess of bismuth with arsenic solutions, under oxidizing conditions. Ed.]

THE ORIGIN OF PETROLEUM AND ASPHALT. Clifford Richardson, *J. Ind. Eng. Chem.* **8**, 1, 4, 1916.

R. briefly reviews the results of his studies on the origin of the famous Trinidad asphalt, which showed "that the heavy petroleum rising from the oil sands thru a paste of colloidal clay and water was emulsified therewith by the violent action of escaping natural gas and that this emulsion of oil and colloidal material was converted, after reaching the surface, into solid asphalt." He then suggests that just as asphalt has been produced by surface action between liquid petroleum and solid colloidal material, so also has the petroleum itself been produced by a similar surface action between a natural gas and the sands or clays with which it has come in contact. Differences in the original gas and the condensing materials will account for all observed variations in the character of natural petroleums. The ultimate origin of the natural gas is not discussed.

INTUMESCENT KAOLINITE. W. T. Schaller and R. K. Bailey, of the U. S. Geological Survey, *J. Wash. Acad. Sci.*, **6**, 3, 67–68, 1916.

(Abstract reprinted by permission from *Chemical Abstracts*, **10**, 6, 733, 1916)

A white minutely crystalline mineral from Back Bone Mountain, LeFlore Co., Okla., has proved on examination to be kaolinite, altho it differs from previously described occurrences of this mineral in intumescing strongly before the blowpipe. Its indices of refraction are $\alpha = 1.561$, $\beta = 1.563$, $\gamma = 1.567$, and agree with the values given by certain authors for this species; the mean value $n = 1.54$ given in some books is regarded as too low [for crystalline material, though not for amorphous. Ed.]. Analysis by B. gave SiO_2 46.55, Al_2O_3 38.90, H_2O 14.04, sum 99.49%, agreeing closely with the theory for the mineral. The H_2O was found to behave normally, only traces escaping below 330°.

NOTE ON THE VARIABLE COMPOSITION OF MELANOCHALCITE. W. F. Hunt and E. H. Kraus, of the Univ. of Michigan, *Am. J. Sci.* **41**, 2, 211–214, 1916.

This supposed mineral species, first described by Koenig in 1902, has been regarded as a basic cupric ortho-silico-carbonate. H. and K. show by microscopic examination that the material

is a mixture, and from the original analysis and a new one made by H. prove it to consist of variable quantities of tenorite, chrysocolla, and malachite. [Material obtainable from Ward's Natural Science Establishment.]

OBSERVATIONS ON CERTAIN TYPES OF CHALCOCITE AND THEIR CHARACTERISTIC ETCH PATTERNS. C. F. TOLMAN, JR., *Bull. Am. Inst. Mining Eng.* **1916**, 401–433

This consists of a discussion of the genesis of chalcocite, illustrated by numerous photomicrographs.

A PECULIAR INTERGROWTH OF PHOSPHATE AND SILICATE MINERALS. EDGAR T. WHERRY, *J. Wash. Acad. Sci.* **6**, 5, 105–108, 1916.

(Abstract by L. W. Riggs, reprinted by permission from *Chemical Abstracts* **10**, 9, 1148–1149, 1916)

A green and white substance associated with variscite in fissure veins in metamorphosed slate near Manhattan, Nevada, consists of a green glassy mass, traversed by numerous sub-parallel wavy white lamellas, varying from 1 to less than 0.05 mm. in thickness. Both minerals are amorphous, showing only traces of doubly refracting material. Analysis by J. E. Whitfield of as pure a specimen of the green mineral as could be obtained by hand picking, but containing submicroscopic white lamellas, gave: CaO 6.30, CuO 1.25, MgO 0.80, Al_2O_3 25.90, Fe_2O_3 2.14, P_2O_5 24.76, SiO_2 7.32, H_2O below 100° 21.90, above 100° 9. 20, sum 99.57%. A small sample of the white lamellas containing perhaps $\frac{1}{3}$ of its weight of green material was analyzed by E. T. W. with the following results CaO+CuO 9.0, Al_2O_3+Fe_2O_3 23.3, MgO 0.5, P_2O_5 12.1, SiO_2 30.0, H_2O below 100° 10.4, above 100° 14.8, sum 100.1%. On comparison with the known aluminium phosphate minerals the former was found to resemble vashegyite most closely, and is probably an impure form of that species. The white mineral is a zeolite related to laubanite, but amorphous. The material studied is thus regarded as a colloidal vashegyite traversed by rhythmically precipitated laminae of a calcium-aluminium silicate of probably zeolitic nature.

[NOTE.—This material was discovered by Mr. Percy Train, of Manhattan, Nevada, who can probably furnish specimens to collectors.]

EXCHANGES OFFERED

Exchange notices will be printed free of charge to our subscribers in this column. Goods for sale must be offered in the advertizing columns.

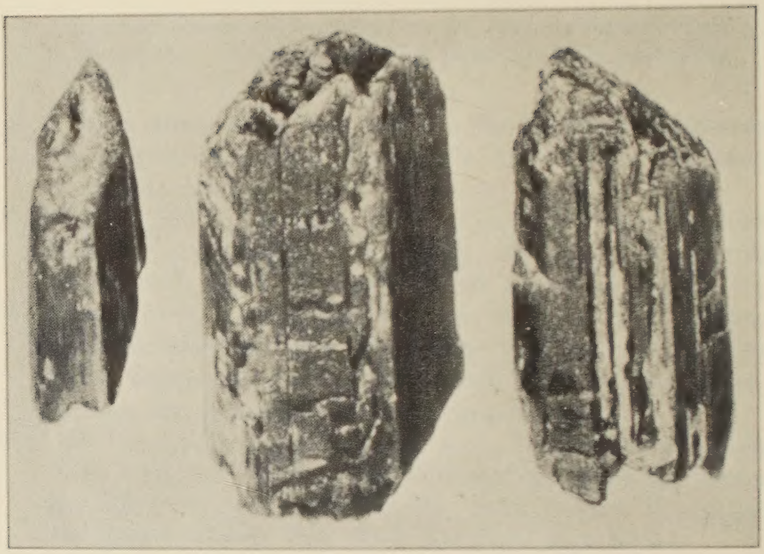
A. J. Riçe, 1041 Wood St., Easton, Pa. Verdolite, asbestos, noble serpentine, rose calcite, talc, biotite, blue limestone, chrysotile, pyrite.

Roy Carson, 380 S. Chester Ave., Pasadena, Cal. Beach stones, polished or unpolished, including chalcedony (California moonstone), jasper of various colors, agate, serpentine, etc.

W. Scott Lewis, 3493 Eagle St., Los Angeles, Cal. Desert jasper, chalcedony (fine for cutting); rare forms of petrified wood, asphaltum from La Brea fossil beds; shell limestone; biotite, and miscellaneous common minerals.

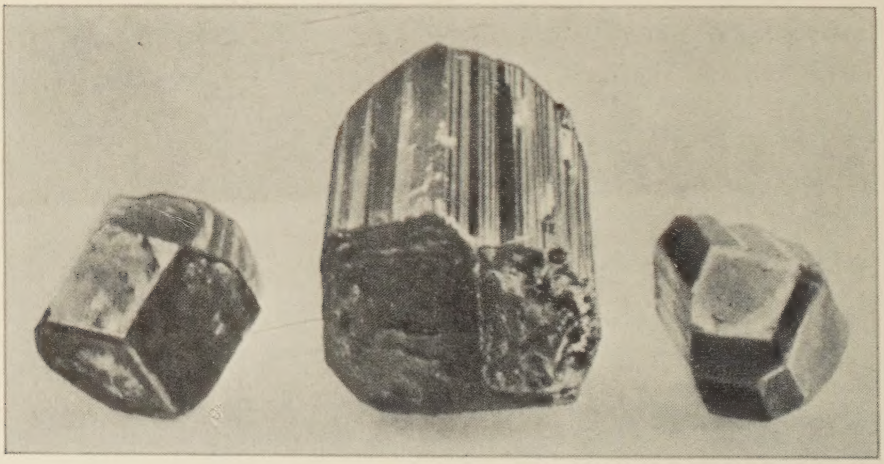
Wm. H. Broadwell, 571 Hawthorne Ave., Newark, N. J. New Jersey zeolites (Apophyllite, laumontite, natrolite, pectolite, prehnite, etc.); thaumasite, babingtonite; rhodonite, franklinite, zincite, etc. List sent upon application.

W. G. Levison, 1435 Pacific St., Brooklyn, N. Y. will exchange fine specimens of New Jersey minerals for any parts of the Proceedings of the Lyceum of Natural History of N. Y., Series 1 and 2, or any parts of Vols. 1, 2 and 3 of the Annals of the N. Y. Acad. of Sciences.



Photograph by Louis P. Gratacap

Crystals of Green and Yellow Beryl, with Eroded Summits. Sahanivotry, Madagascar



Photograph by Louis P. Gratacap

Crystals of Red, Yellow and Brown Tourmaline. Mt. Bity District, Madagascar

PLATE II